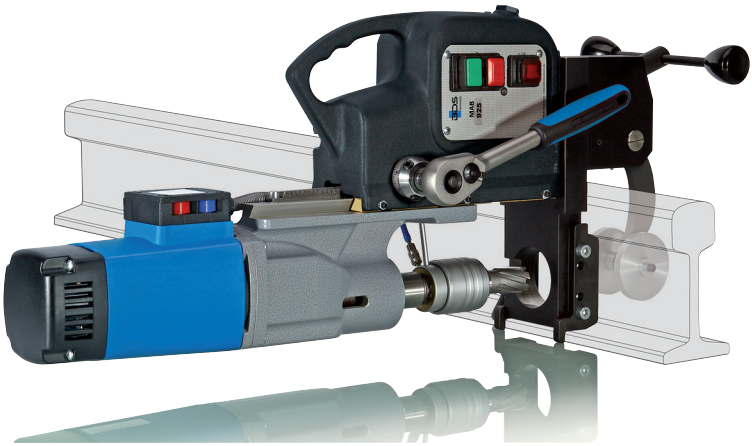
BDS MASCHINEN

GB

Original-
Operating Instructions

RailMAB 925



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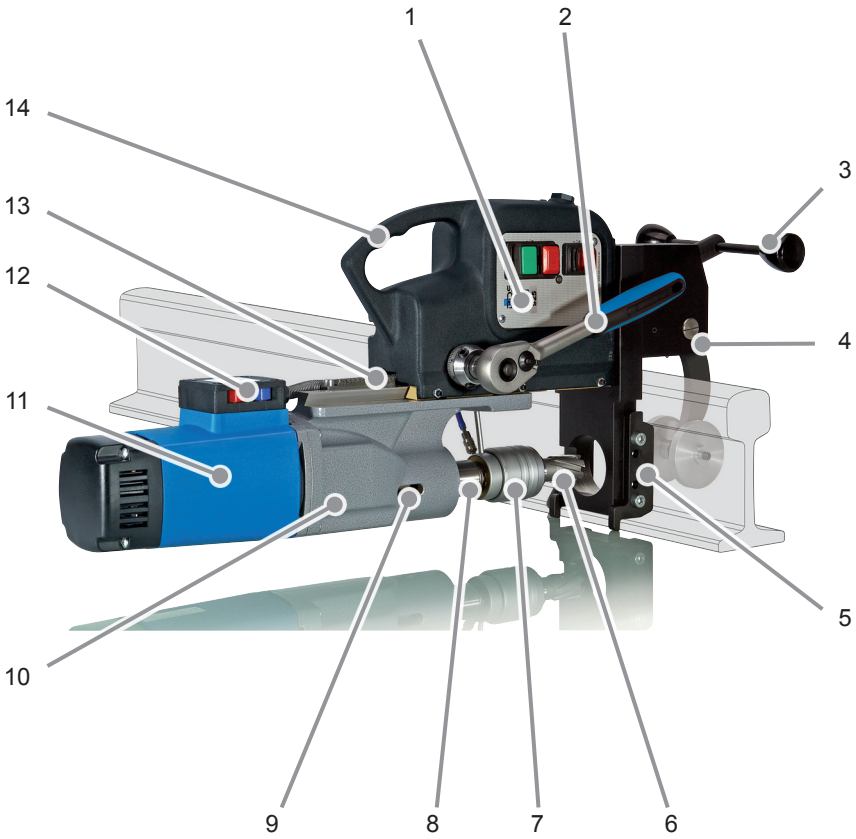
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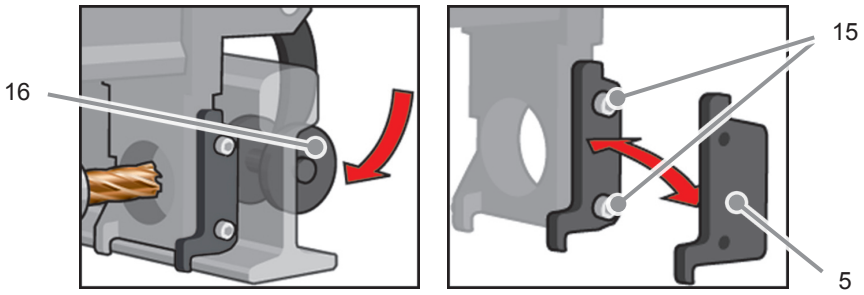
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Dear Customer,

Before using the machine, please read the operating instructions contained in these operating instructions on startup, safety, intended use as well as cleaning and care.

The links and illustrations in these instructions refer to the illustrations on the inside of the cover.

Keep these operating instructions for later use and pass them onto the next owner of the machine.

General instructions

Copyright

This document is copyrighted. Any duplication or reprinting, in whole or in part, and the reproduction of the illustrations, even in modified form, is only permitted with the written approval of the manufacturer.

Liability disclaimer

All technical information, data and instructions for commissioning, operation and maintenance of the machine contained in these operating instructions represent the latest status at the time of printing.

The manufacturer assumes no liability for damage or injury resulting from failure to observe the operating instructions, use for other than the intended purpose, unprofessional repairs, unauthorised modifications or use of non-approved spare parts and accessories, tools and lubricants.

Instructions on disposal

The packaging materials used can be recycled. When no longer required, dispose of the packaging materials according to local environmental regulations.

This product may not be disposed of in the domestic refuse within the European Union. Dispose of the device via communal collection points.

Safety warning structure

The following warnings are used in these operating instructions:

⚠ DANGER

A warning of this category indicates an impending dangerous situation.

If the dangerous situation is not avoided, it may lead to serious injury or even death.

► Follow the instructions in this warning to avoid possible danger of serious injury or even death.

⚠ WARNING

A warning of this category indicates a potentially dangerous situation.

If the dangerous situation is not avoided, it may lead to injuries.

► Follow the instructions in this warning to avoid possible danger of serious personal injuries.

CAUTION

A warning statement for this safety risk class indicates a damage risk.

If the situation is not avoided, it may lead to material damage.

► Follow the instructions in this warning to avoid material damage.

NOTE

► A note indicates additional information that simplifies the use of the machine.

Intended use

The machine is intended solely for drilling operations in rails within the limits specified in the technical data.

Any use other than previously stated is considered as improper use.

⚠ WARNING

Danger resulting from improper use!

If not used for its intended purpose and/ or used in any other way, the machine may be or become a source of danger.

► Use the machine only for its intended purpose.

► Observe the procedures described in these operating instructions.

No claims of any kind will be accepted for damage resulting from use of the appliance for other than its intended purpose.

The risk must be borne solely by the user.

NOTE

► If used commercially, pay attention to compliance with the accident prevention and occupational safety regulations.

Safety

⚠ WARNING

When using electrical tools, the following fundamental precautions must be taken to protect against electric shock, fire, injuries and damage to property!

Fundamental safety precautions

- Do not use the machine in flammable or potentially explosive environments.
- Persons who are unable to operate the machine due to their physical, mental or motor response abilities may only use the machine under supervision of or instruction by a responsible person.
- Children must not be allowed to use the machine.
- Before using, check the machine and the connecting cable for damage and do not put a damaged machine into operation.
- Before beginning work, check the condition of the machine and the function of the operating elements.
- Only allow repairs to the connecting cable to be carried out by a qualified electrician.
- Only allow repairs to the machine to be carried out by an authorised specialist workshop or works customer service. Unqualified repairs can lead to considerable danger for the user.
- Repairs to the machine during the warranty period may only be carried out by a service centre authorised by the manufacturer otherwise the guarantee will be invalidated.
- Defective parts may only be replaced with original spare parts. Only original spare parts guarantee that the safety requirements are met.
- Do not leave the machine unsupervised during operation.
- Store the machine in a dry, temperate location out of the reach of children.
- Do not allow the machine to stand outside and do not expose to moisture.
- Make sure that your work area is sufficiently lit (>300 Lux).
- Do not use low-power machines for heavy working.
- Make sure that your workplace is clean.
- Keep the machine clean, dry and free of oil and grease.
- Follow the instructions on lubricating and cooling the tool.

Danger from electric current!

⚠ DANGER

Danger to life from electric current!

Contact with live wires or components can lead to serious injury or even death!

Observe the following safety precautions to avoid any danger from electric current:

- ► Do not open the housing of the machine. Risk of electric shock if live terminals are touched.
- ► Never immerse the machine or the plug into water or other liquids.
- ► Only use extension or cable drums with a cable cross-section of at least 1.5 mm².
- ► Only use extension that are approved for the place of work.
- ► Check the condition of the extension cable regularly and replace if damaged.
- ► Avoid direct body contact with grounded parts (e.g., tubes, radiators, steel girders) to reduce the risk of electric shock in the event of a defect.

Risk of injury!

⚠ WARNING

Risk of injury from motor starting unintentionally!

Pay attention to the following safety notes to avoid danger from motor starting unintentionally:

For safe stopping of the motor:

- ► Press the red button of the motor switch (20).
- ► Switch off the machine with the main switch (19).
- ► Disconnect the voltage supply.

⚠ WARNING

Improper handling of the machine increases the risk of injury!

Observe the following safety precautions to avoid injuring yourself and/or others:

- ► Operate the machine only with the protective equipment stipulated in these operating instructions (see ***Personal protective equipment*** section).
- ► **Do not** wear protective gloves when the machine is running. A glove can be caught by the drilling machine and torn off the hand. Risk of losing one or more fingers.
- ► Remove loose jewellery before beginning work. Wear a hair net if you have long hair.
- ► Always switch off the machine before changing tools, performing maintenance or cleaning. Wait until the machine has come to a complete standstill.

⚠ WARNING

- ► Always disconnect the voltage supply before changing tools, cleaning or performing maintenance work in order to avoid unintentional starting of the machine.
- ► Do not put your hand into the machine while it is in operation. Remove swarf only when the machine is at a standstill. Wear protective gloves when removing swarf.
- ► Before using each time, check for firm stability of the quick clamping system on the rail (see section ***Preparation***).
- ► Check that the tool is tightened securely before using (see ***Inserting the tool*** section).
- ► Do not allow the connecting cable to hang over edges (trip wire effect).

Preventing damage

CAUTION

Potential damage to property if the machine is improperly used!

Observe the following instructions to avoid property to damage:

- ► Before connecting the machine, compare the connection data (voltage and frequency) on the rating plate with those of your mains power supply. The data must correspond in order to avoid damage to the machine.
- ► Always carry the machine by the handle.
- ► Do not pull the mains cable to remove the plug from the mains socket.
- ► Do not crush the connecting cable.
- ► Do not expose the connecting cables to heat or chemical liquids.
- ► Do not pull the connecting cable across sharp edges or hot surfaces.
- ► Lay the connecting cable so that it cannot be caught and wound up in the rotating parts of the machine.

Safety equipment

Overheat protection

The machine is additionally equipped with thermal overload protection. If the machine becomes too hot, it switches off automatically.

Perform the following steps before continuing to work with the machine:

- Switch off the motor with the red button of the motor switch (20).
- Switch off the machine at the main switch (19) and disconnect the machine from the voltage supply.
- Remove any blockages that may have occurred.
- Allow the machine to cool down.

The machine is then ready for operation again.

Symbols on the machine

The symbols on the machine have the following meaning:

Symbol	Meaning
	Electric shock hazard!
	Read the operating instructions before beginning work!
	Wear protective goggles and ear protection!

Personal protective equipment

Wear the following protective equipment at all times when operating the machine:

Symbol	Meaning
	Close-fitting work protection clothing with a low tear strength
	Goggles for protecting eyes against flying parts and liquids and ear protection in areas with noise emission >80 dB(A)
	Safety shoes for protecting feet against falling objects.

Also wear the following protective equipment during special work:

Symbol	Meaning
	Helmet for protecting your head against falling objects
	Wear a harness where there is a danger of falling.
	Gloves for protection against injuries

Components / delivery contents

Machine overview

1	Operating panel
2	Reversible ratchet
3	Spindle key (fast clamping system)
4	Fast clamping system
5	Rail adapter
6	Core drill (not supplied as standard)
7	Tool mounting KEYLESS quick-change drill chuck system
8	MK3 spindle taper
9	Opening for ejector pin
10	2-speed gearbox with selector
11	Drive motor
12	Speed and torque controller
13	Machine slide with guide
14	Handle
15	Fixing screws (rail adapter)
16	Clamping jaw (fast clamping system)
17	Torque regulator
18	Speed regulator
19	Master switch
20	Motor switch

Delivery contents

	Rail core drill with high-pressure container 5l for cutting/drilling emulsion in the transport case (not illustrated)
A	KEYLESS quick-change drill chuck system 19 mm Weldon (3/4")
B	MK3 ejector pin
C D	ZAK075 ejector pin ZAK100 ejector pin
E	Rail adapter of your choice (no special designs)
F	Reversible ratchet

Before using for the first time

Transport inspection

As standard, the machine is supplied with the components indicated in the ***Components/delivery contents***"section.

NOTE

► Check for visible signs of damage or missing items on delivery. Report an incomplete or damaged delivery to your supplier/retailer immediately.

Preparation

This section contains important instructions on the required preparation before beginning any work.

The machine is intended to be used in a horizontally-aligned work position at close proximity to the ground.

Additional safety measures when not in a horizontal work position at close proximity to the ground

⚠ WARNING

Risk of injury from a falling machine.

When not working in a horizontal work position at close proximity to the ground, the machine must be secured against falling down.

- ► Use suitable slinging or hoisting equipment to secure the machine.
- ► Only secure the machine to the handle and free of backlash.
- ► Attach the safeguards so that the machine slips away from the operator.
- ► Take pendulum movement of a falling machine into account and secure a suitable danger zone.
- ► Before beginning any work, check secure positioning of the safety measures.
- ► Use the protective equipment stipulated in the section ***Personal protective equipment.***

Checking the rail type

The holding force of the fast clamping system (4) depends on the fitting accuracy of the rail adapter (5) to the rail.

The following requirements must be fulfilled in order to establish sufficient holding force:

- Only the rail adapters (5) associated with the rail type may be used.
- The surfaces of the fast clamping system (4) must be clean and free of grease.

NOTE

- ► In addition to the rail adapters (E) listed in the range of accessories, BDS offers special adapters for special rails on request.
- ► Eliminate unevenness, rust as well as dirt and grease residue from the rail.

Mounting the rail adapter

The machine is equipped with a socket for various rail adapters (E).

The corresponding adapter set must be used according to the type of rail.

Rail type	Order number rail adapter
UIC 50	ZAS 050U
UIC 54	ZAS 054U
UIC 60	ZAS 060U
S 49	ZAS 049S
S 54	ZAS 054S
Other	On request

⚠ WARNING

Risk of injury!

Incorrectly, damages or improperly mounted rail adapters (5) decrease the holding force of the fast clamping system (4), this can lead to injuries

- ► Only use the matching rail adapter (5) for the respective rail type.
- ► Do not use damaged, contaminated or worn tools rail adapters (5).
- ► Change the rail adapter only when the machine is switched off and at a standstill. Disconnect the voltage supply.
- ► Change the rail adapter only when the the fast clamping system is not tensioned.

⚠ WARNING

- ► After mounting, check for secure, firm seating of the rail adapter (5).
- ► Only use tools, adapter and accessories that match the machine.

Mounting the rail adapter (5)

- ◆ Loosen both fixing screws (15) of the rail adapter set on each respective side.
- ◆ Insert both rail adapters (5) and tighten the fixing screws (15).

Dismantling the rail adapter

- ◆ Loosen both fixing screws (15) of the rail adapter set on each respective side.
- ◆ Remove both rail adapters (5).

Inserting the tool

The machine is equipped with an MK tool holder.

Depending on the type of tool to be used, corresponding drill chucks, quick-clamping systems or adapters must be used.

Tool	Tool holder to be used
Tools with Weldon-19 mm shank	Use KEYLESS (A) quick-change drill chuck system
Tools with MK taper	Insert the tool directly into the spindle taper (8)
Tools with straight shank	Use a drill chuck with MK3/ B16 tapered mandrel (available as an accessory).

⚠ WARNING

Risk of injury!

- ► Do not use damaged, contaminated or worn tools.
- ► Change tools only when the machine is switched off and at a standstill. Disconnect the voltage supply.
- ► After inserting, check that the tool is engaged securely.
- ► Only use tools, adapter and accessories that match the machine.

MK tool mounting

Inserting the tool

- ◆ Before mounting, clean the shank of the tool, adapter or drill chuck and the spindle taper (8) of the machine.
- ◆ Insert the tool into the spindle taper (8) of the machine from below.

⚠ WARNING

Risk of injury from incorrectly inserted tool!

- ► Check the proper seating of the tool, adapter or drill chuck in the MK tool mounting.

Removing the tool

- ◆ Insert the ejector pin (B) into the ejector pin holder (9) of the MK3 spindle taper (8).
- ◆ Lever out the tool with the ejector pin (B) or loosen the tool by tapping against the ejector pin (B).

Using the drill chuck

Inserting the tool

- Insert the drill chuck onto the tapered mandrel and insert the combination into the spindle taper (8) of the machine.
- Open the drill chuck and insert the tool into the drill chuck.
- Close the drill chuck by hand and then tighten the drill chuck with the chuck key.

Removing the tool

- Loosen the drill chuck with the chuck key and remove the tool.

⚠ WARNING

Risk of injury!

- ► Only tighten the drill chuck with the chuck key provided.
- ► Always remove the chuck key from the drill chuck after tightening or loosening.

Keyless quick-change drill chuck system

Inserting the tool

- Before mounting, clean the shank of the tool, adapter or drill chuck and the spindle taper (8) of the machine.
- Push the KEYLESS quick-change drill chuck system (A) from below into the spindle taper of the machine.
- Connect the line of the high-pressure container for cutting oil/drilling emulsion to the connection for the KEYLESS quick-change drill chuck system (A).
- Open the KEYLESS quick-change drill chuck system (A) by pushing up the outside sleeve and insert the tool into the chuck.

NOTE

- ► Insert the appropriate ejector pin (C, D) before inserting the core drill.

⚠ WARNING

Risk of injury from incorrectly inserted tool or tool mounting!

- ► Turn the tool briefly to check whether the collet is engaged.

Removing the tool

- Open the KEYLESS quick-change drill chuck system (A) by pushing up the outside sleeve and pull the tool down out of the chuck.

Using

Fixing the machine

Tensioning the fast clamping system

- Insert the machine with the rail adapter (5) into the rail profile at right angles to the rail.
- Press the clamping jaw (16) onto the rail by turning the spindle key (3).

Slackening the fast clamping system

- Hold the handle tightly (14) to stop the machine from slipping.
- Release the clamping jaw (16) from the rail by turning the spindle key (3)
- Remove the machine from the rail.

Switching the machine ON/OFF

Switching on the machine

- Switch on the machine with the main switch (19).
- Switch on the motor at the motor switch (20) with the green button.

Switching off the machine

- Switch off the motor at the motor switch (20) with the red button.
- Switch off the machine with the main switch (19).

⚠ WARNING

Risk of injury from motor starting unintentionally!

Pay attention to the following safety notes to avoid danger from motor starting unintentionally:

For safe stopping of the motor:

- ► Press the red button of the motor switch (20).
- ► Switch off the machine with the main switch (19).
- ► Disconnect the voltage supply.

Selecting the speed range

CAUTION

► Switch the gear stages only with the machine at standstill.

The machine has a gearbox with two mechanical gear stages:

Gear stage 1: 70 - 280 rpm

Gear stage 2: 180 - 580 rpm

◆ To select the desired gear stage, set selector lever to stage 1 or 2 with the machine switched off.

NOTE

► Select the speed range according to the material and drilling diameter.

Setting the speed

In addition to the mechanical gearbox, the machine is also equipped with full-wave control electronics for stepless variable speed adjustment.

◆ First set the appropriate gear stage, then adapt the speed using the electronic speed control (18).

Gear stage 1: 70 - 280 rpm

Gear stage 2: 180 - 580 rpm

NOTE

► If possible, always select a setting with low gear stage and high motor speed. The motor is then set with a higher torque and therefore protected against overheating under heavy load.

Setting the torque

In order to protect the tool, the maximum torque of the machine can be set using the controller (17).

The machine shuts down when it reaches the maximum set torque. After shutdown, the machine must be switched off and on again via the motor switch (20) and the main switch (19).

Drilling with the machine

Drilling with core drills

When drilling with core drills, proceed as follows:

◆ Mount the KEYLESS quick-change drill chuck system (A).

◆ Install the appropriate ejector pin in the core drill and insert the core drill into the quick-change drill chuck system.

◆ Position the machine at the location of use, align it and fix the machine with the fast clamping system (4).

◆ Select a suitable speed and switch on the machine.

◆ Guide the machine carriage with the help of the reversible ratchet (2) and without exerting too much pressure until the desired core drill is established.

NOTE

Observe the following instructions when drilling with core drills:

- ► Drilling with core drills does not require great force. The drilling process is not accelerated by higher pressure. The drill wears faster and the machine can be overloaded.
- ► Use the high-pressure container for cutting oil/drilling emulsion with BDS 6000 cooling lubricant at the machine.
- ► Make sure that swarf is removed regularly. With larger drilling depths, break up the swarf.

Drilling with twist drills

When drilling with twist drills, proceed as follows:

- ◆ Push twist drills with MK taper into the spindle taper (8) of the machine from below.
- ◆ Push twist drills with straight shank into the drill chuck after fitting the drill chuck.
- ◆ Position the machine at the location of use, align it and fix the machine with the fast clamping system (4).
- ◆ Select a suitable speed and switch on the machine.
- ◆ Guide the machine carriage with the help of the reversible ratchet (2) and without exerting too much pressure until the desired drilling depth is established.

NOTE

- ► Under excessive pressure, the drill can wear out and the machine can be overloaded.
- ► Use ZHS 400 high-performance grease spray. Before drilling, spray the drill with grease spray. In the case of larger drill depths, repeat this procedure.
- ► Make sure that swarf is removed regularly. With larger drilling depths, break up the swarf.

Eliminating blockages

⚠ WARNING

Danger of cut injuries from broken tool parts or swarf.

► Put protective gloves on before starting work.

Blockages caused by a broken tool:

- Switch off the motor with the red button of the motor switch (20).
- Switch off the machine with the main switch (19).
- Disconnect the voltage supply.
- Move the machine carriages to the upper position with the help of the reversible ratchet (2).
- Replace defective tool. Remove swarf.

Other blockages:

- Switch off the motor with the red button of the motor switch (20).
- Switch off the machine with the main switch (19).
- Disconnect the voltage supply.
- Move the machine carriages to the upper position with the help of the reversible ratchet (2).
- Remove swarf and check tool.

⚠ WARNING

Risk of injury from motor starting unintentionally!

Pay attention to the following safety notes to avoid danger from motor starting unintentionally:

For safe stopping of the motor:

► Press the red button of the motor switch (20).

► Switch off the machine with the main switch (19).

► Disconnect the voltage supply.

Cleaning

⚠ WARNING

- ► Switch off the machine and disconnect the voltage supply before performing maintenance or cleaning.
- ► When using compressed air for cleaning, wear protective goggles and gloves and protect other persons in the working area.

CAUTION

- ► Never immerse the machine in water or other liquids.

After every use

- ◆ Remove the inserted tool.
- ◆ Remove swarf and coolant residues.
- ◆ Clean the tool and the tool holder on the machine.
- ◆ Clean the guide of the machine slide (13).
- ◆ Put the machine and accessories into the transport case.

Maintenance

⚠ WARNING

Danger caused by unqualified repairs!

Unqualified repairs can lead to considerable danger for the user and cause damage to the machine.

- ► Repairs to and maintenance on electrical appliances may only be carried out by the works customer service or by specialists trained by the manufacturer.

Adjusting the machine slide guide

If the machine slide guide (13) exhibits too much clearance, it must be adjusted. To do this, proceed as follows:

- ◆ Loosen the clamping bolts.
- ◆ Tighten the adjusting screws evenly.
- ◆ Tighten the clamping bolts again.

Replacing the carbon brushes

Replacement of the carbon brushes may only be carried out by BDS or by an authorised specialist workshop. Unauthorised repairs will invalidate the guarantee.

Customer service/service

Should you have any questions on customer service/service, please contact BDS. We will be happy to give you the address of your nearest service partner.

Storage

If you do not intend to use the machine for a longer period of time, clean it as described in the section ***Cleaning***. Store the machine and all its accessories in the transport case at a dry, clean and frost-free location.

Troubleshooting

Fault	Possible cause	Remedy
The motor does not start after pressing the ON/OFF switch or stops during operation.	Plug not inserted into socket.	Insert plug.
	Automatic circuit breaker tripped.	Switch on circuit breaker.
	The internal safety switch has switched off the machine due to overheating.	Allow the machine to cool down.
	The torque cut-off has tripped.	Switch the machine on and off.
	Main motor switch switched off.	Switch in the main motor switch.
The automatic circuit breaker in the electrical distribution board trips.	Too many appliances connected to the same power circuit.	Reduce the number of appliances on the power circuit.
	The machine is defective.	Disconnect the machine from the voltage and notify customer service.
Tools wear excessively/are damaged.	No lubrication or not sufficiently greased.	Supply lubrication (e.g.: use high-pressure container for cutting oil/drilling emulsion).
The fast clamping system does fix the machine to the rail properly.	Wrong rail adapter (E) selected.	Select and mount a suitable rail adapter (E).

NOTE

► If you cannot resolve the problem with the steps described above, please contact customer service.

Technical data

Model	RailMAB 925	Unit
Dimensions (L x W x H)	170 x 295 x 625 - 775	mm
Approx. net weight.	17	kg
Operating voltage (see type plate)	230V 50-60Hz 100/125V 50-60Hz	
Power consumption	1600	W
Noise emission	89	db(A)
Vibration	0.85	m/s²
Stroke	160	mm
Core drill (HKK-R) max. Ø	17 - 36	mm
Cutting depth max.	55	mm
Twist drill max. Ø	20	mm
Gear stage 1 speed	n= 70 - 280	rpm
Gear stage 2 speed	n= 180 - 580	rpm
Thermal protection	Yes	
Variable torque	Yes	
Full-wave control electronics	Yes	
Spindle taper	MK3	
Core drill assembly	Weldon 19 mm (3/4“)	
Connecting cable length	2.8	m
Protection class	I	

EC Declaration of Conformity

Name/address of the manufacturer:	**BDS Maschinen GmbH** Martinstraße 108 D-41063 Mönchengladbach
We hereby declare that the product	
Model:	**Core drilling machine**
Type:	**RailMAB 925**

conforms to the following relevant regulations:

- **EC Directive 2006/42/EC on machinery**

The following harmonised standards were applied in whole or in part:

- DIN EN ISO 12100-2010
- DIN EN 61000-6-4:2007 +A1:2011
- DIN EN 55014-1:2006 + A1:2009 + A2:2011
- DIN EN 55014-2:1997 + Corr. 1997 +A1: 2001 + A2:2008
- DIN EN 60745-1:2009
- DIN EN 60745-2-1:2010

Responsible person for documentation according to EC Directive 2006/42/EC - Annex II Pt.A.2. was:

_____

(Surname, forename, position in company of the manufacturer)

Mönchengladbach, 1st February, 2014	 Wolfgang Schröder, Technical Director _____ (Legally binding signature of the issuer)

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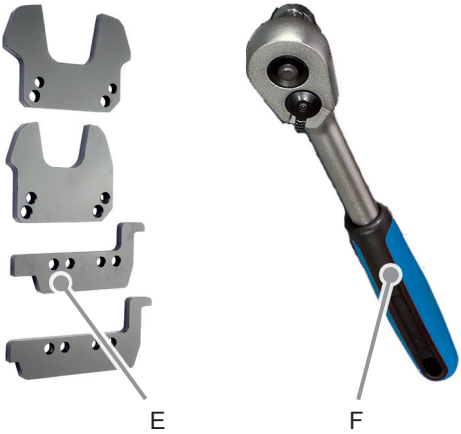
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